REMARKS

The examiner is thanked for a thorough examination of the present patent application.

Claims 1-16 are pending in the application with Claims 1, 8, and 15 as Independent Claims.

Claims 1, 8, and 15 are currently amended. Claims 3 and 10 are currently cancelled.

I. CLAIM REJECTION UNDER 35 USC 103(a)

Claim 1 was rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (U.S. Patent No. 6,311,138) in view of Wiggers (U.S. Patent No. 5,397,981) and D'Albora (U.S. Patent No. 4,114,136). The applicant respectfully traverses.

For a valid rejection under 35 U.S.C. 103(a), "[t]he **examiner bears the initial burden** of factually supporting any *prima facie* conclusion of obviousness." MPEP Edition 8 Revision 2, Sec. 2142 (italic in the original; bold added). "The PTO bears the burden of establishing a case of prima facie obviousness." *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993); *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966),

"To establish a *prima facie* case of obviousness, three basic criteria must be met. **First**, there **must** be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. **Second**, there **must** be a reasonable expectation of success. **Finally**, the prior art reference (or references when combined) **must** teach or suggest all the claim limitations." MPEP Edition 8 Revision 2, Sec. 2142 (italic in the original; bold added), citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

A. The Rejection Should Be Withdrawn On **Procedural Grounds**

"The teaching or suggestion to make the claimed combination and the reasonable expectation of success **must both be found in the prior art**, and **not based on applicant's disclosure.**" Id. (bold added). In fact, "The mere fact that reference **can be** combined or modified does not render the resultant combination obvious **unless the prior art also suggests** the desirability of the combination." MPEP Edition 8 Revision 2, Sec. 2143.01 (underline in the original, bold added), citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Again, there must be a suggestion or motivation **in the reference** to do so. *In re Mills*, 916 F.2d at 682, 16 USPQ2d at 1432 (bold added).

Here, the rejection fails to establish the elements of the *prima facie* case of obviousness. Firstly, the rejection fails to establish the first element of the *prima facie* case of obviousness that requires the suggestion to combine the references to be "found in the prior art." Such motivation to combine the three cited references is nakedly alleged without citation to the cited references.

In light of the fact that the rejection fails to meet its burden to shown a *prima facie* case of obviousness, the applicant respectfully submits that no further discussion is necessary for allowance of Claim 1.

However, the applicant currently amends, without prejudice, Claim 1 to recite the present invention with even more particularity.

Further, to provide additional assistance for the examiner, the applicant respectfully submits, without prejudice, the following additional analysis:

B. The Rejection Should Be Withdrawn On **Substantive Grounds**

The applicant respectfully submits that the Miller reference, the Wiggers reference, and the D'Albora reference, individually, or in any combination, do not render Claim 1 obvious. Claim 1 recites, inter alia, a step of "calculating bit period of the input signal by determining time period between the first zero space and the second zero space" where a zero space "is a period of time with no signal value (or data points) above certain threshold." Specification, paragraph [0004].

The Final Action admits that the "Miller [reference] does not explicitly teach **calculating bit period of the input signal by determining the time period between the first zero space and the second zero space.**" Final Action, paragraph 11 (bold in the original). However, the Final Action alleges that the "Wiggers [reference] teaches ... **calculating bit period of the input signal by determining the time period between the first zero space and the second zero space.**" Final Action, paragraph 12 (bold in the original). The Final Action asserts that this allegation is supported because, in the Wiggers reference, "amplitude value of each sample is compared to a reference threshold, and **three consecutive zero crossings** calculated[, t]hen the period is calculated as the time between the first and the third crossings." Id (bold added).

The applicant respectfully traverses and submits that the assertion of the Final Action is incorrect. Calculating bit period based on zero space is **not** equivalent to calculating bit period from "three consecutive zero crossings." This is because, for example, the two different approaches result in two different calculated bit periods for real world jittered and noise signals.

In the Wiggers reference, "the period of the signal [is] determined" by finding where "the amplitude of a signal crosses a horizontal reference line three times." Wiggers, col. 7, lines 16-18 and Wiggers, Figure 3.

In contrast, Claim 1 of the present invention determines the bit period by finding two consecutive zero spaces. Claim 1.

Figure A below shows noisy signal sample with sampled data points illustrating the differences. For the Signal S, a single waveform, sampled points are illustrated in small diamond data points. Under the Wiggers approach, "three consecutive zero crossings" are found as X1, X2, and X3 and the Wiggers' Bit Period X.

In contrast, in Claim 1, zero space patterns P1 and P2 are first found where a zero space "is a period of time with no signal value (or data points) above certain threshold." Specification, paragraph [0004]. Here, the Bit Pattern Z is calculated from the patterns P1 and P2. As illustrated, the Bit Pattern Z is different than and, in this case, more correct than, Bit Pattern X found under the Wiggers invention.

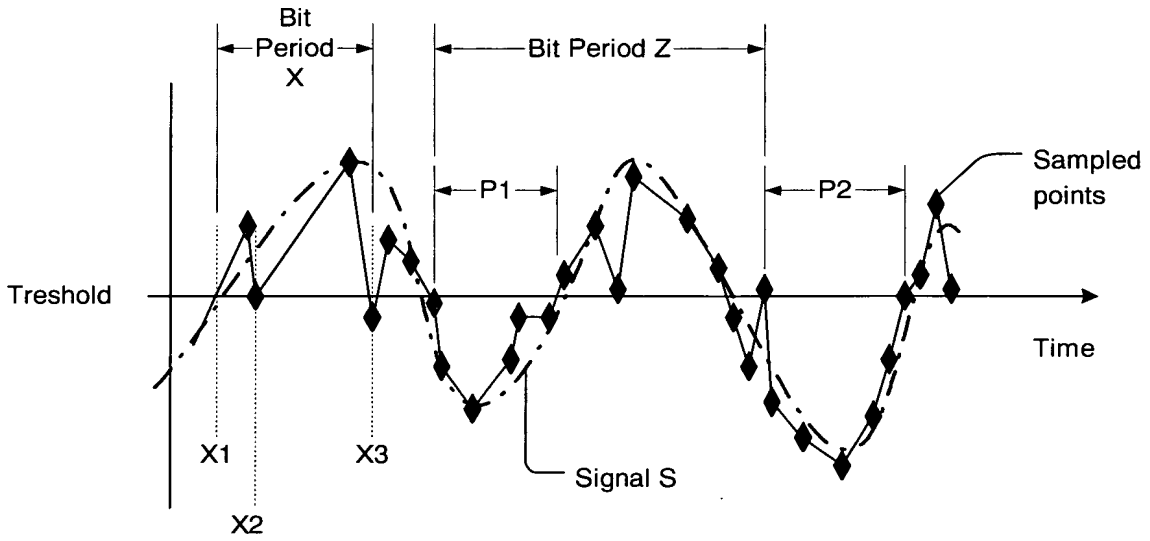


FIGURE A

Figure B below shows noisy signal samples with sampled data points in multi-waveform graph for RZ signal, for example, in pseudorandom binary sequence (PRBS) multi-waveform signal. Here, under the Wiggers approach, "three consecutive zero crossings" are completely useless as its "zero crossings" X1, X2, and X3 are everywhere and results in useless Bit Period X.

In contrast, in Claim 1, zero space patterns P1 and P2 are first found where a zero space "is a period of time with no signal value (or data points) above certain threshold." Specification, paragraph [0004]. Here, the Bit Pattern Z is calculated from the patterns P1 and P2. As illustrated, the Bit Pattern Z is different than and, again in this case, more correct than, Bit Pattern X found under the Wiggers invention.

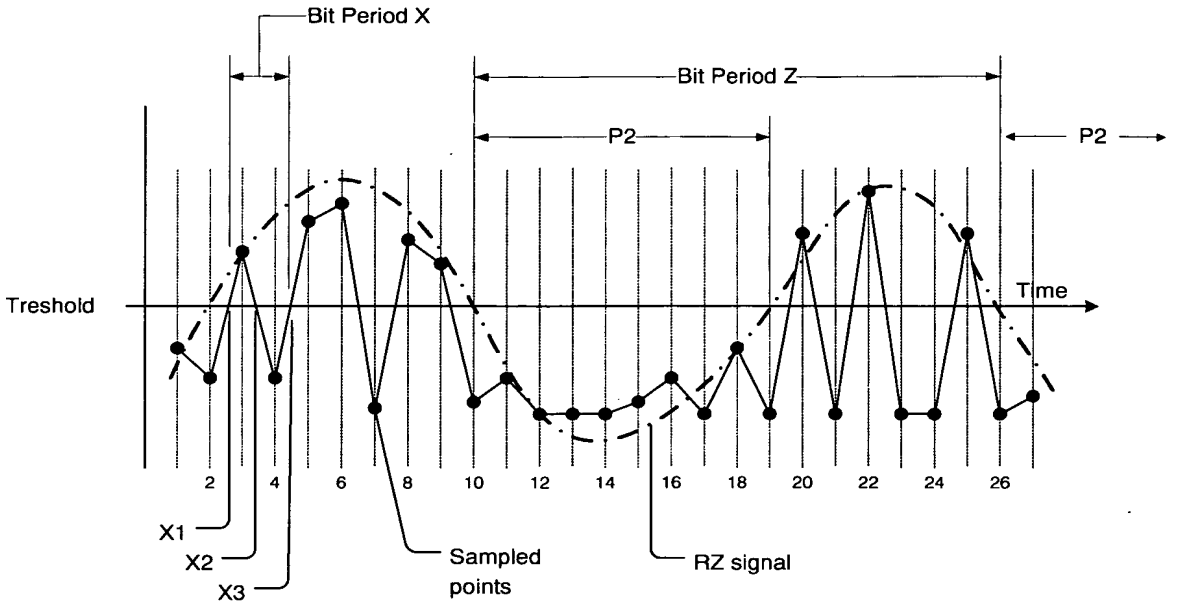


FIGURE B

Consequently, the Miller reference, the Wiggers reference, and the D'Albora reference, individually, or in any combination, do not render Claim 1 obvious. This is because, as discussed, even when combined, the cited references fail to each the step of "calculating bit period of the input signal by determining time period between the first zero space and the second zero space" as recited in Claim 1. Thus, the references fail to meet the third requirement of the prime facie case of obviousness under MPEP 2143 and *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Accordingly, the applicant respectfully submits that Claim 1 is allowable over the cited references.

C. Claim 1 is even more allowable with the Current Amendment

Claim 1 is currently amended to recite, *inter alia*, step of "determining, if zero space pattern is not found, whether non-return-to-zero (NRZ) autoscale is applicable if zero space pattern is not found." This step was previously recited by Claim 3 now cancelled.

Dependent Claim 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over the Miller reference, the Wiggers reference, and the D'Albora reference and in further in

view of Norton (U.S. Patent No. 4,592,077). Final Action, p. 11 et seq. The applicant respectfully traverses.

Contrary to the allegations made in the Final Action, the D'Albora reference does not teach a step of determining whether NRZ autoscale is applicable. Rather, in the D'Albora reference, its input signal is assumed to be an NRZ signal and is processed as such. See, e.g, the portions of the D'Albora reference cited by the Final Action.

Accordingly, even if the D'Albora reference is combinable and is combined with the Miller reference and the Wigger reference, these references fail to teach all limitation of Claim 1, currently amended.

Consequently, the applicant respectfully submits that Claim 1, currently amended, is allowable over the cited references.

D. Other Claims

Dependent Claim 2 was rejected under 35 U.S.C. 103(a) as being unpatentable over the Miller reference in view of D'Albora and Wiggers references, and further in view of Gauland et al. (U.S. Patent No. 6,571,185). Final Action, p. 10 et seq. The applicant respectfully traverses.

The applicant respectfully traverses. Claim 2 depends on Claim 1, currently amended. The applicant respectfully submits that Claim 2 is allowable for at least the same reasons for which Claim 1, currently amended, is allowable. See, e.g., *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

Dependent Claim 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over the Miller reference, the Wiggers reference, and the D'Albora reference and in further in view of the Norton reference. Final Action, p. 11 et seq. Claim 3 is currently cancelled obviating the rejection.

Dependent Claims 4-7 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Miller reference in view of the Wiggers reference and the D'Albora reference.

The applicant respectfully traverses. Claims 4-7 depend, directly or ultimately, on Claim 1, currently amended. The applicant respectfully submits that Claims 4-7 are allowable for at least the same reasons for which Claim 1, currently amended, is allowable. See, e.g., *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

Claim 1 was rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (U.S. Patent No. 6,311,138) in view of Wiggers (U.S. Patent No. 5,397,981) and D'Albora (U.S. Patent No. 4,114,136). The applicant respectfully traverses.

Independent Claims 8 and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Miller reference in view of the Wiggers reference and the D'Albora reference. The applicant respectfully traverses.

Claims 8 and 15 are currently amended similarly to Claim 1, currently amended.

Although different in scope compared to Claim 1, Claims 8 and 15 recite similar limitations to Claim 1. Accordingly, the applicant respectfully submits that Claims 8 and 15 are allowable over the cited reference for at least the same reasons for which Claim 1 is allowable.

Dependent Claim 9 was rejected under 35 U.S.C. 103(a) as being unpatentable over the Miller reference in view of D'Albora and Wiggers references, and further in view of the Gauland reference. The applicant respectfully traverses.

The applicant respectfully traverses. Claim 9 depends on Claim 8, currently amended. The applicant respectfully submits that Claim 9 is allowable for at least the same reasons for which Claim 9, currently amended, is allowable. See, e.g., *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

Dependent Claim 10 was rejected under 35 U.S.C. 103(a) as being unpatentable over the Miller reference, the Wiggers reference, and the D'Albora reference and in further in view of the Norton reference. Claim 10 is currently cancelled obviating the rejection.

Dependent Claims 11-14 were rejected under 35 U.S.C. 103(a) as being

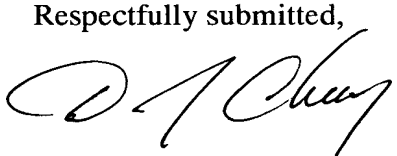
unpatentable over the Miller reference in view of the Wiggers reference and the D'Albora reference. The applicant respectfully traverses. Claims 11-14 depend, directly or ultimately, on Claim 8, currently amended. The applicant respectfully submits that Claims 11-14 are allowable for at least the same reasons for which Claim 8, currently amended, is allowable. See, e.g., *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

Dependent Claim 16 was rejected under 35 U.S.C. 103(a) as being unpatentable over the Miller reference in view of the Wiggers reference and the D'Albora reference. The applicant respectfully traverses. Claim 16 depends on Claim 15, currently amended. The applicant respectfully submits that Claim 16 is allowable for at least the same reasons for which Claim 15, currently amended, is allowable. See, e.g., *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

CONCLUSION

In view of the foregoing Remarks, the applicants respectfully submit that the entire application is in condition for allowance. The applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



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